

TITLE:

Go beyond the limits of Genetic Algorithm in daily covariate selection practice

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Date: Received: data/ Accepted: date

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Section 4: Additional information for the simulated case study

Table S4.1: Typical values and standard deviation of covariates used to simulate the 200 patients

Covariate	Mean	Standard Deviation
BMI	26 kg/m ²	4 kg/m ²
HT	1.6m (1.5 m female – 1.7 m male)	0.2 m
CR	1.0 mg/DI	0.13 mg/DI
AGE	40 years	8 years
SEX	-	0.5 female – 0.5 male
WT	-	-
BSA	-	-
CRCL	-	-

Table S4.2: Typical values and standard deviation of the simulated population of 200 patients

Covariate	Mean	Standard Deviation
BMI	26.27 kg/m ²	4.423 kg/m ²
HT	1.607m (1.51m female – 1.697m male)	0.236m
CR	1.006 mg/DI	0.125 mg/DI
AGE	40.6 years	8.717 years
SEX	-	0.48 female – 0.52 male
WT	69.16 kg	22.633 kg
BSA	1.747 m ²	0.4012 m ²
CRCL	96.31 mL/min	34.533

Table S4.3: Correlation matrix of generated covariates

	BMI	HT	CR	AGE	WT	BSA	CRCL
BMI	1.00	-0.05	-0.04	-0.02	0.46	0.32	0.43
HT	-0.05	1.00	0.01	0.04	0.85	0.93	0.75
CR	-0.04	0.01	1.00	-0.01	0.00	0.00	-0.34
AGE	-0.02	0.04	-0.01	1.00	0.03	0.03	-0.20

WT	0.46	0.85	0.00	0.03	1.00	0.98	0.89
BSA	0.32	0.93	0.00	0.03	0.98	1.00	0.88
CRCL	0.43	0.75	-0.34	-0.20	0.89	0.88	1.00

Table S4.4: Parameter of the model of the simulated scenario

Param	True Model used for simulation
CL	0,648
V	2,259
BMI on CL	0,2014
CRCL on CL (exponential)	0,3063
BSA on V	0,0958
SEX on V	-0,3207
Additive Error	0,1
Proportional Error	0,001
CL - inter-individual variability	0,2
V - inter-individual variability	0,2
Correlation between CL and V	0,05

Configuration file for the simulated scenario

model=SimulatedModel.mod

continuous_covariates=BMI,HT,CR,AGE,WT,BSA,CRCL

categorical_covariates=SEX

[test_relations]

CL=BMI,HT,CR,AGE,WT,BSA,CRCL,SEX

V=BMI,HT,CR,AGE,WT,BSA,CRCL,SEX

[valid_states]

continuous=1,2,3,4,5

categorical=1,2

